AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method for digitizing at least a subarea of the papillary structure of skin, the subarea defining an intensity profile with a continuous intensity domain, comprising the steps of:

- transforming the intensity profile into at least one analog electrical signal, and
- transforming said analog electrical signal into at least one digital signal with an intensity domain comprising discrete intensity values and a space domain comprising discrete positions,
- repeatedly performing the ~~transforming~~ steps of transforming the intensity profile into at least one analog electrical signal and of transforming said analog electrical signal into at least one digital signal with an intensity domain comprising intensity values and a space domain comprising discrete positions for the same subarea to form ~~a plurality of~~ different digital signals with different intensity discretizations in each case, and
- combining the ~~plurality of~~ different digital signals into a common digital papillary structure signal with an intensity domain formed from discrete intensity values and a space domain formed from discrete positions in such a way that the intensity domain of the papillary structure signal has more intensity values than the intensity domains of each single one of the ~~plurality of~~ different digital signals.

2. (Currently Amended) The method according to claim 1, wherein the repeated performing of the transforming steps is done for different portions of the continuous intensity domain in each case, so that after the combining step the intensity domain of the digital papillary structure signal covers a larger portion of the continuous intensity domain than the intensity domains of each single one of the ~~plurality of~~ digital signals.

3. (Previously Presented) The method according to claim 2, wherein upon the repeated performing of the transforming steps, the portions of the continuous intensity domain are determined upon transforming the intensity profile into the analog electrical signal.

4. (Previously Presented) The method according to claim 3, wherein the determination of the second and the further portions is carried out by using data of the previous portion or portions.

5. (Previously Presented) The method according to claim 3, wherein the number of intensity values is determined by the choice or number of portions.

6. (Previously Presented) The method according to claim 3, wherein the transforming of the intensity profile into an analog electrical signal is done by a capacitive signal converter, and the portion of the continuous intensity domain is determined by quantities of charge applied to capacitors of the capacitive signal converter.

7. (Previously Presented) The method according to claim 2, wherein upon the repeated performing of the transforming steps, the portions of the continuous intensity domain are determined upon transforming the analog electrical signal into a digital signal.

8. (Previously Presented) The method according to claim 7, wherein the determination of the second and the further portions is carried out by using data of the previous portion or portions.

9. (Previously Presented) The method according to claim 7, wherein the number of intensity values is determined by the choice or number of portions.

10. (Previously Presented) The method according to claim 2, wherein the portions of the continuous intensity domain together cover the total continuous intensity domain.

11. (Previously Presented) The method according to claim 2, wherein the portions of the continuous intensity domain are adjacent and do not overlap.

12. (Previously Presented) The method according to claim 2, wherein the portions of the continuous intensity domain overlap.

13. (Previously Presented) The method according to claim 1, wherein the repeated performing of the transforming steps is carried out with different numbers of discrete intensity values of the intensity domains of the digital signals in each case.

14. (Previously Presented) The method according to claim 1, wherein the combining step comprises the following substeps:

- estimating a discrete intensity value for each discrete position of the digital papillary structure signal from the respective discrete intensity values of the accordingly corresponding discrete positions of the digital signals, and
- entering the estimated intensity value at the corresponding discrete position of the digital papillary structure signal.

15. (Currently Amended) The method according to claim 2, wherein the combining step comprises before the estimating and entering substeps the following substep:

- normalizing the intensity domains of the ~~plurality of~~ digital signals to the portion of the continuous intensity domain detected ~~by~~ in the respective digital signal.

16. (Previously Presented) The method according to claim 15, wherein upon the estimating step, only those discrete intensity values of the accordingly corresponding positions of the digital signals are taken into account that do not represent a maximum or minimum intensity value of the respective digital signal.

17. (Previously Presented) The method according to claim 14, wherein upon the estimating step, the arithmetic mean of the discrete intensity values of the accordingly corresponding positions of the digital signals is formed as the discrete intensity value of a discrete position of the digital papillary structure signal.

18. (Currently Amended) The method according to claim 1, wherein upon the repeated performing of the transforming steps, the continuous intensity domain is mapped to intensity domains of the ~~plurality of~~ digital signals with only two discrete intensity values in each case, and wherein for each of the ~~plurality of~~ digital signals a different threshold value is determined for partitioning the continuous intensity domain into two subdomains which are

each mapped to one of the two discrete intensity values of each of the ~~plurality of~~ digital signals.

19. (Currently Amended) The method according to claim 18, wherein upon the combining step, the ~~plurality of~~ digital signals are ~~is~~ added up.

20. (Previously Presented) The method according to claim 1, wherein upon the repeated performing of the transforming steps, digital color signals are produced, and a digital papillary structure color signal is produced therefrom upon the combining step.

21. (Currently Amended) An apparatus for digitizing at least a subarea of the papillary structure of skin, the subarea defining an intensity profile with a continuous intensity domain, comprising a transformation device for transforming the intensity profile into at least one analog electrical signal, and an analog/digital converter for transforming said analog electrical signal into at least one digital signal with an intensity domain comprising discrete intensity values and a space domain comprising discrete positions,

a control device which causes the transformation device and the analog/digital converter to ~~produce~~ perform for the same sub area,

the transforming of the intensity profile into at least one analog electrical signal and the transforming of the analog electrical signal into at least one digital signal with an intensity domain comprising discrete intensity values and a space domain comprising discrete positions for the same subarea repeatedly to form ~~a plurality of~~ different digital signals with different intensity discretizations in each case ~~for the same subarea~~, and

a combination device which combines the ~~plurality of~~ digital signals into a common digital papillary structure signal with an intensity domain comprising discrete intensity values and a space domain comprising discrete positions in such a way that the intensity domain of the digital papillary structure signal has more discrete intensity values than the intensity domains of each single one of the ~~plurality of~~ digital signals.

22. (Currently Amended) The apparatus according to claim 21, wherein

- the control device is arranged to determine in each case different portions of the continuous intensity domain of the intensity profile to be mapped to the intensity domain of the respective digital signal, and

- the combination device is arranged to combine the ~~plurality of~~ digital signals in such a way that the intensity domain of the digital papillary structure signal covers a larger portion of the continuous intensity domain than the intensity domains of each single one of the ~~plurality of~~ digital signals.

23. (Previously Presented) The apparatus according to claim 22, including means for mapping a portion to be mapped of the continuous intensity domain of the intensity profile as determined by the control device to the analog electrical signal upon transformation of the intensity profile by the transformation device.

24. (Previously Presented) The apparatus according to claim 22, wherein the transformation device is a capacitive signal converter.

25. (Previously Presented) The apparatus according to claim 22, including means for mapping a portion to be mapped of the continuous intensity domain of the intensity profile as determined by the control device to a digital signal upon transformation of the analog electrical signal by the analog/digital converter.

26. (Previously Presented) The apparatus according to claim 22, wherein the control device is arranged to adjust the portions to be mapped of the continuous intensity domain of the intensity profile in such a way that they altogether cover the total continuous intensity domain.

27. (Previously Presented) The apparatus according to claim 21, wherein the control device is arranged to determine in each case different numbers of discrete intensity values for the intensity domains of the digital signals.

28. (Previously Presented) The apparatus according to claim 21, wherein the combination device is arranged to estimate a discrete intensity value for each discrete position of the digital papillary structure signal from the respective discrete intensity values of the accordingly corresponding discrete positions of the digital signals.

29. (Currently Amended) The apparatus according to claim 22, wherein the combination device, before estimation of the discrete intensity values of the digital papillary structure signal, is arranged to normalize the intensity domains of the ~~plurality of~~ digital signals to the portion of the continuous intensity domain detected ~~by~~ in the respective digital signal.

30. (Previously Presented) The apparatus according to claim 29, wherein the combination device, upon estimation of the discrete intensity values of the digital papillary structure signal, is arranged to take into account only those intensity values of the accordingly corresponding discrete positions of the digital signals that do not represent either the maximum or the minimum intensity value of the particular intensity domain.

31. (Currently Amended) The apparatus according to claim 21, wherein:

- the control device is arranged to determine for each of the ~~plurality of~~ digital signals intensity domains with only two discrete intensity values, and to determine for each digital signal a different threshold value for partitioning the continuous intensity domain into two subdomains, for mapping one of the subdomains to in each case one of the two discrete intensity values of each of the ~~plurality of~~ digital signals, and
- the combination device is arranged to add up the digital signals.

32. (Previously Presented) The apparatus according to claim 21, wherein:

- the transformation device and the analog/digital converter produce digital color signals,
- the control device causes the transformation device and the analog/digital converter to produce a plurality of different digital color signals for the same subarea, and
- the combination device produces a digital papillary structure color signal.